In the Specification

Please make the paragraph substitutions indicated in the appendix entitled Clean Version of Amended Specification Paragraphs. The specific changes incorporated in the substitute paragraphs are shown in the following marked-up versions of the original paragraphs:

The paragraph beginning at page 19, line 6, is amended as follows:

Figure 2C shows one embodiment of a method for fabricating an energy-storage device. Steps 251, 253, 259, 261, and 263 are ~~the~~ substantially similar to the steps described above with reference to Figure 2B. Step 255C is a step for depositing a cathode film at least partially on the cathode contact film. In an embodiment, the cathode film is deposited as described above in step 255. In other embodiments, the cathode film is deposited according to other deposition processes known in the art. The electrolyte film is formed by depositing an electrolyte material to a location at least partially in contact with the cathode film (step ~~257B~~ 257C). In a preferred embodiment, the electrolyte material is in contact with a substantial portion of, if not all of, a surface of the cathode film. In some embodiments, an assist source simultaneously supplies energized particles to the electrolyte material as it forms the electrolyte film. In an embodiment, the assist source supplies a beam of energized ions of an assist material different than the electrolyte material. In one embodiment, the second material beam is directed to the same location on the substrate as the electrolyte material. The energized ion beam assists in controlling growth of the structure of the electrolyte film. The ion beam is unfocused in one embodiment. The ion beam is ~~focussed~~ focused in another embodiment.

The paragraph beginning at page 25, line 5, is amended as follows:

Figure 7 shows another embodiment of a depositing apparatus 705 according to the teachings of the present invention. Depositing apparatus 705 includes a reaction chamber 707 in which is positioned an elongate, flexible substrate 709 on which an energy-storage device is to be fabricated. The substrate 709 is fed from a source roll 710 over an arched thermal control surface 715 and taken up by an end roll ~~713~~ 718. A first material source 711 is provided in the chamber 707 and is a physical deposition source. First source 711 produces a beam of adatoms 712 of a material to be deposited on the substrate 709. In one embodiment, the first source 711 is an arc source including, for example, a cathodic arc source, an anodic arc source, and a CAVAD arc source. In another embodiment, the first source 711 is a physical vapor deposition source including, for example, a sputtering source. In another embodiment, source 711 is a chemical vapor deposition source. Moreover, source 711, in some embodiments, represents a plurality of different material sources. Beam 712 is focused on a location 719 on the substrate 709 whereat the adatoms in the beam are deposited to form a film layer of an energy-storage device. An assist source 713 is provided in the chamber 707 and produces a beam of energized particles 714 directed at the substrate 709. In an embodiment, the assist source 713 produces a beam of energized ions 714. The energized particle beam 714 provides the energy required to control growth and stoichiometry of the deposited material of the first beam 712. Thus, a crystalline structure is formed on the substrate 709 as is explained in greater detail herein. The substrate 709, in one embodiment, is an elastomer, polymer, or plastic web or sheet on which the energy-storage device is fabricated. Substrate 709, being elongate, allows a plurality of energy-storage devices to be deposited on successive locations of the substrate, thereby improving the rate of energy device production. Moreover, a plurality of deposition apparatuses 705 or sources 711, in some embodiments, are provided for simultaneously depositing a plurality of films at different locations on the substrate 709.

The paragraph beginning at page 26, line 8, is amended as follows:

The above provides descriptions of various embodiments of systems in which the present invention is performed to produce energy-storage devices or energy-conversion devices. It is within the scope of the present invention to combine the elements of the systems in different ways than shown and described as long as the methods described herein are performable with such a system. For example, in some embodiments, the flexible substrate 709 and rolls 710, ~~713~~ 718 can be combined with any of the embodiments shown in Figures 3A-6. In some embodiments, the thermal source 725 is also combinable with any of the embodiments of Figures 3A-6. In some embodiments, the pivotable assist sources 413 are combinable with any of the embodiments of Figures 3A, 3B, 5A, 5B, and 7. In some embodiments, the material sources 511A, 511B, and 511C are combinable with embodiments of Figures 3A-5A and 6-7.

The paragraph beginning at page 26, line 18, is amended as follows:

In one embodiment, the electrode second film, e.g., films 59 or 71 is a lithium-intercalation material which overlays at least part of the first film, e.g., contact films 57 or 63, but does not extend beyond the boundary of the first film. Thus, the intercalation second film remains in a solid state during discharging and charging of the energy-storage device. In some embodiments, the second film is deposited using the first deposition source simultaneously with the secondary source supplying energetic ions to the growing second film. In some embodiments, the first deposition source is a physical vapor deposition source. In some embodiments, the secondary source is an ion source supplying energetic ions from a source gas comprising oxygen (e.g., ~~O2~~ $\underline{O_2}$) or nitrogen (e.g., ~~N2~~ $\underline{N_2}$). The source gas, in another embodiment, comprises a noble gas, e.g., argon, xenon, helium, neon, and krypton. The source gas, in yet another embodiment, comprises a hydrocarbon material such as a hydrocarbon precursor. Selection of the secondary source gas is based on the desired effect on the stoichiometry of the deposited film. The secondary source, in one embodiment, provides a focused beam of energized ions. The secondary source, in one embodiment, provides an unfocused beam of energized ions. The energized ions provide energy to the lithium-intercalation material in the range of about 5 eV to about 3,000 eV. In one embodiment, the energy range of is about 5 eV to about 1,000 eV. The energy range in a further embodiment is about 10 eV to about 500 eV. The energy range in a further embodiment is about 30 eV to about 300 eV. In another embodiment, the energy range is in the range of about 60 eV to 150 eV. In another embodiment, the energy range is about 140 eV. In an embodiment, the second film has a thickness of greater than 10 microns. In one embodiment, the second film has a thickness in the range of about 10 to 20 microns. In one embodiment, the second film has a thickness in the range of about 1 to 5 microns.

The paragraph beginning at page 27, line 10, is amended as follows:

An electrolyte third film, e.g., films 61, 61C or 73, having ionic transport qualities but not being electrically conductive (an electrolyte) is deposited so as to completely overlay the second deposited film. In one embodiment, the third film is deposited using a first deposition source and a secondary source supplying energetic ions to the growing film. In some embodiments, the first deposition source is a physical vapor deposition source. In some embodiments, the secondary source is an ion source with the capability of supplying energetic ions having an energy greater than 5 eV. In another embodiment, the energy range is about 5 eV to about 3,000 eV. In one embodiment, the energy range of is about 5 eV to about 1,000 eV. The energy range in a further embodiment is about 10 eV to about 500 eV. The energy range in a further embodiment is about 30 eV to about 300 eV. In another embodiment, the energy range is in the range of about 60 eV to 150 eV. In another embodiment, the energy of the ions from the secondary source is about 140 eV. In some embodiments, the secondary source includes oxygen (e.g., ~~O2~~ $\underline{O_2}$) or nitrogen (e.g., ~~N2~~ $\underline{N_2}$) gas. The secondary source gas, in another embodiment, includes a noble gas, e.g., argon, xenon, helium, neon, and krypton. The secondary source gas, in another embodiment, includes a hydrocarbon material such as a hydrocarbon precursor. Selection of the secondary source gas is based on the desired effect on the stoichiometry of the deposited film. The secondary source, in one embodiment, provides a focused beam of energized ions. The secondary source, in one embodiment, provides a non-focused beam of energized ions. It is desirable to make the electrolyte, third layer as thin as possible and prevent the cathode and anode layers from shorting. In an embodiment, the third film has a thickness of less than 1 micron. In one embodiment, the third film has a thickness in of less than 5,000 Angstroms. In another embodiment, the third film has a thickness of less than 1,000 Angstroms. In another embodiment, the third film has a range of about 10 Angstroms to about 100 Angstroms.

The paragraph beginning at page 28, line 8, is amended as follows:

An anode, fourth film, e.g., film 65 or 75 includes from a lithium-intercalation material that is deposited on and overlays the third film but not contacting first film (barrier) or second film (cathode). In one embodiment, the fourth film is deposited using a first deposition source simultaneously with a secondary source supplying energetic ions to the growing fourth film. In some embodiments, first deposition source is a physical vapor deposition source. In some embodiments, the secondary source is an ion source supplying energetic ions from a source gas that includes oxygen (e.g., ~~O2~~ $\underline{O_2}$) or nitrogen (e.g., ~~N2~~ $\underline{N_2}$). The source gas, in another embodiment, includes a noble gas, e.g., argon, xenon, helium, neon, and krypton. The source gas, in another embodiment, includes a hydrocarbon material such as a hydrocarbon precursor. Selection of the secondary source gas is based on the desired effect on the stoichiometry of the deposited film. The secondary source, in one embodiment, provides a focused beam of energized ions. The secondary source, in another embodiment, provides an unfocused beam of energized ions. The energized ions provide energy to the lithium-intercalation material in the range of about 5 eV to about 3,000 eV. In one embodiment, the energy range of is about 5 eV to about 1,000 eV. The energy range in a further embodiment is about 10 eV to about 500 eV. The energy range in a further embodiment is about 30 eV to about 00 eV. In another embodiment, the energy range is in the range of about 60 eV to 150 eV. In another embodiment, the energy range of the ions from the secondary source is about 140 eV. In an embodiment, the fourth film has a thickness of greater than 10 microns. In one embodiment, the fourth film has a thickness in the range of about 10 to 40 microns.

The paragraph beginning at page 32, line 3, is amended as follows:

In some embodiments, the materials and compositions of photovoltaic cell 800 are conventional CdS/CdTe materials such as is described in U.S. Patent No. 4,207,119, which is incorporated by reference; with the additional processing according to the present invention to anneal or treat the surface (e.g., by ion-assist beam) of the films as they are deposited~~using~~. In other embodiments, the compositions used are as described in the following publications, each of which is incorporated by reference: R.W. Birkmire et al, "Polycrystalline Thin Film Solar Cells: Present Status and Future Potential," Annu. Rev. Mater. Sci. 1997.27:625-653 (1997); T.L. Chu et al, "13.4% Efficient thin-film CdS/CdTe Solar Cells," J. Appl. Phys. 70 (12) (15th December 1991); T. Yoshida, "Photovoltaic Properties of Screen-Printed CdTe/CdS Solar Cells on Indium-Tin-Oxide Coated Glass Substrates," J. Electrochem. Soc., Vol. 142, No. 9, (September 1995); T. Aramoto et al., "16% Efficient Thin-Film CdS/CdTe Solar Cells," Jpn. J. Appl. Phys. Vol. 36 pp 6304-6305 (Oct. 1997); R.B. King, ed. "Encyclopedia of Inorganic Chemistry" Vol 3., pp 1556-1602, John Wiley & Sons Ltd., (1994).

The paragraph beginning at page 32, line 20, is amended as follows:

In a heterojunction photovoltaic cell, the semiconductor films are formed of different materials. For a rectifying junction, the semiconductor films must also be of different type, that is p or n type. The junction between the two semiconductor films is both a pn junction and a heterojunction. The first semiconductor film on which solar light is incident has a band gap higher than that of the second semiconductor film. The band gap of a semiconductor is the energy separation between the semiconductor valance band and the conduction band. The band gap of this first semiconductor film is chosen so that it corresponds to light in the short wavelength region of the solar spectrum. Photons of light having energy equal to or greater than the band gap of the first semiconductor film are strongly absorbed, but photons of light of energy less than the band gap of the first semiconductor pass through the first semiconductor and enter the second semiconductor film. Examples of materials used for the first semiconductor film include CdS, ZnS, CdZnS, CdO, ZnO, CdZnO, or other wide band gap semiconductors like SiC, GaN, InGaN, and AlGaN. The second semiconductor film is chosen from materials that have band gaps that correspond well to the long wavelength onset of solar radiation. Materials such as CdTe, ~~CuInSe2~~ $CuInSe_2$, InP, GaAs, InGaAs, InGaP, and Si are examples of materials for the second semiconductor film.

The paragraph beginning at page 49, line 19, is amended as follows:

Figure 15H shows that the batteries have been folded along the fold lines to form a stack of three batteries ~~1100,~~ 1110, 1110' and 1110". The folds shown in Figure 15H are a fan fold. Once the fan fold is formed, as shown in Figure 15H, the fan folded battery, including three cells 1330, can be formed in any desired shape, such as ~~those shown in~~ square-sided shape 1503 of Figure 15C, angle-sided shape 1504 of 15D and curve-sided shape 1505 of 15E. The three-celled or multi-celled unit 1330 can be adhered to the interior or exterior surface of any electronic device, as discussed above. It should be noted that the fan fold can include more than three batteries or less than three batteries. The inventive aspect is that it includes a plurality of batteries. The cells 1110, 1110' and 1110" can be attached to one another so that the cells are in series after they are diced. Another possibility is that the electrical contacts for each of these could be put in contact with one another as a result of fan folding the multi-celled unit 1330.

The paragraph beginning at page 49, line 29, is amended as follows:

Figures 15I, 15J and 15K show yet another embodiment of the invention. In this particular embodiment of the invention, the sheet of electrical cells 1300 includes a plurality of cells including 1110 and 1110'. The entire sheet 1300 is then vacuum formed to form more or less an egg carton 1350 with individual battery cells 1110 and 1110' being formed within well 1360 and 1362 in the sheet 1300. Between the wells 1360 and 1362 is a living hinge 1370. The batteries 1110 and 1110' are at the bottom of each well ~~1160 and 1162~~ 1360 and 1362, as shown in Figure 15K. The living hinge 1370 is positioned between the two wells 1360 and 1362. The first cell 1360 can be folded on top of the second well 1362 to form an electronic device enclosure 1380, as shown in Figure 15L. It should be noted that the size of the battery portions 1110 and 1110' can be limited or placed so that other traces and room for other electronic devices can be added so that a total circuit can be formed within a disc enclosure. This provides for an advantage that wherein the electronic component could be directly placed into the wells 1160 and 1162 at sites formed at the same time as the batteries were deposited onto the sheet 1300. After placing all the various electronics, the electronic device can be formed merely by dicing two of the wells 1360 and 1362 so that they form a top and bottom of the device enclosure 1380. All sorts of electronic devices could be included, including an LCD or other display device. The LCD may be readable directly through a sheet if it is transparent or the sheet, or one of the wells 1360 and 1362, may be provided with an opening that would correspond to an opening or face of the display of an LCD or other display device. Thus, the sheet and the deposited battery thereon can ultimately become the exterior surface or the enclosure for the device formed on the sheet. This has a great advantage in that the process steps necessary to form a device are or can be quite easily and efficiently done in a continuous process. This would lead to very efficient manufacturing of electronic devices.

The paragraph beginning at page 50, line 22, is amended as follows:

Figure 16A is a plan view of a sheet including a plurality of cells 1110 according to this invention. Figure 16A, 16B and 16C show a way to form a laminated battery cell and possibly laminated battery cell and electronics for a smart card or other invention that includes a battery and electronics within a card. The sheet 1300 shown in Figure 16A includes cells 1110. The sheet also includes fold lines 1390 and 1392. The sheet 1300 is diced into individual sections, which include fold lines 1390 and 1392, as well as a battery cell site 1110. The battery cell site might also include electronics that are also deposited with the battery or energy source onto the sheet 1300. The diced portion 1400 includes one portion including the cell 1100 and two blank portions 1402 and 1403. The diced portion 1400 is then fan folded, as shown in Figure 16C.

Once a fan fold has been formed, the cell portion 1110 is captured between the two unpopulated sheet portions 1402 and 1403 and will provide an extra protective layer. The excess portions of the sheet 1300 can be trimmed, as shown in Figure 16D to produce a smart card or card including both a battery 1110 and electronic, as shown <u>as item 1600E</u> in Figure 16E.

The paragraph beginning at page 51, line 5, is amended as follows:

Figure 17 is an exploded perspective view of a diced portion of a sheet 1300 which includes one battery cell 1110 rolled around an electrical motor 1500. In this case, the diced portion~~1300~~, which includes a cell 1110, is an elongated strip 1510 from the original sheet 1300. The elongated strip 1510 may include several batteries placed in series or one elongated battery that is laid down as a strip on the sheet 1300. The electrical motor is electrically connected to the anode and cathode of the battery and then rolled on to the electrical motor 1500. In this case, the strip 1510, on which the battery has been deposited, becomes the case for the electrical motor or also can be viewed as being a part of the case of the electrical motor. The electrical motor can be provided with a sprocket 1520 that is used to drive another gear 1530 having a shaft 1532 attached thereto. As shown in Figure 17, a chuck 1540 is placed upon the shaft 1532 to form a drill or other power tool. Advantageously, the power tool could be light and compact, as well as being capable of being recharged a multiplicity of times. The power tool could be a hand held drill for homeowner use or a smaller device, such as a Dremel-brand rotary hand tool.

The paragraph beginning at page 52, line 2, is amended as follows:

Figures 18C and 18D show another embodiment of the invention for a lighting device. In this particular embodiment, again a strip 1600 is provided with a switch 1602 and an LED 1604. In this particular embodiment, the LED is positioned so that it extends beyond the length of the sheet 1600. In this particular embodiment, the sheet 1600 is rolled along its longer dimension around the LED 1604 to form an elongated case having the LED 1604 at one end of the case and a switch 1602 at the other end of the case. This forms a light emitting diode light 1630 in which the ~~dice~~ sheet 1600 is part of the case.

The paragraph beginning at page 53, line 17, is amended as follows:

A second process is shown in Figure 21B. The second process shown in Figure ~~19B~~ 21B is useful for devices in which the battery 1110 may be removed easily from the enclosure portion. As before, the first step, depicted by reference numeral 1930, is to determine if the electronics are obsolete. If they are, the battery 1110 is merely removed from the case for the enclosure portion and recycled for use in another enclosure portion having a similar contour, as depicted by reference numeral 1950.

The paragraph beginning at page 56, line 17, is amended as follows:

Figure 22G shows a block diagram perspective view of an integrated device ~~2207~~ 2203 implementing circuit 2200 of Figure 22A having the battery 2320 and the circuit 2330 built side-by-side on a substrate 2310. In some embodiments, a pattern of conductive areas or traces is deposited on substrate 2310, and the successive layer(s) of battery 2320 and circuit 2330 are then deposited. In some embodiments, circuit 2330 consists only of these conductive traces. In other embodiments, one or more of the process steps or deposited layers of battery 2320 and circuit 2330 are common, and thus performed at substantially the same time for both circuit 2330 and battery 2320, thus increasing the reliability, speed and yield of fabrication and lowering the cost of fabrication. In the embodiment shown, trace 2318 is deposited on substrate 2310 and forms a common bottom electrical connection for both circuit 2330 and battery 2320. Other aspects of Figure 22G can be understood by reference to Figures 22A-22C.

The paragraph beginning at page 58, line 1, is amended as follows:

Figure 24A shows a perspective view of an embodiment 2400 of the present invention having a battery 2320 overlaid with an integrated device 2430. In some embodiments, integrated device ~~2340~~ 2430 is a so-called supercapacitor relying on either charge accumulation on opposing sides on an insulator (as in a capacitor) or ion transport across an electrolyte (as in a battery), or both charge accumulation and ion transport to store electrical energy. In some embodiments, integrated device ~~2340~~ 2430 includes a photovoltaic cell of conventional construction deposited directly on battery 2320.

The paragraph beginning at page 58, line 8, is amended as follows:

Some embodiments further include a separately fabricated circuit device such as an integrated circuit chip 2440 that is wire-lead bonded to device 2430 using wire 2441, to device-battery common terminal 2324 using wire 2443, and to bottom battery contact 2322 using wire 2442. For example, in one embodiment having a supercapacitor device 2430, integrated circuit ~~2430~~ 2440 includes a wireless communication circuit that uses the battery for overall power needs and uses supercapacitor device 2430 for quick-burst power needs such as for transmitting short burst of data to an antenna. Other embodiments include other fabricated circuit devices such as switches, LEDs or other light sources, LCD displays, antennas, sensors, capacitors, resistors, etc., wired to device 2400.

The paragraph beginning at page 62, line 23, is amended as follows:

Figures 25B-25E show a fabrication sequence for cofabrication of solid-state integrated circuits and solid-state energy source such as that described above, but onto a packaged IC 2540. Figure 25B shows a plan view and Figure 25C shows an elevational view of IC 2540. In some embodiments, IC 2540 includes a silicon chip 2545 having integrated components such as transistors, resistors, memory, etc., a lower substrate ~~2540~~ 2546, and a wiring superstrate 2544 having deposited wires ~~2540~~ 2543 that extend to bonding vias 2542. Figure 25D shows a plan view and Figure 25E shows an elevational view of an integrated battery-IC 2501. Battery-IC 2501 includes a cathode 2326 (e.g., lithium cobalt oxide), electrolyte layer 2327 (e.g., LiPON), and anode layer 2328 (e.g., including copper, carbon, lithium, lithium-magnesium, and/or other suitable anode material). Passivation overcoat layer 2329 suitable to protect the inner components of battery 2320 is then deposited or grown.

The paragraph beginning at page 63, line 4, is amended as follows:

In one embodiment, the ~~product~~ packaged IC 2540 product is formed by conventional means. All machine work and cleaning is accomplished. The package 2540 is sent to energy processing for deposition of battery 2320 or other energy-storage device. The design of the package included a suitable area 2549 for deposition of battery components. Using shadow masks with sufficient overlay accuracy, the necessary components of the energy structure (e.g., a battery and/or photovoltaic cell) are deposited using the methods described above. A final passivation coating 2329 is applied to the energy stack structure. The package with energy structure integrated is sent for assembly.

The paragraph beginning at page 63, line 28, is amended as follows:

Figure 25F shows a block diagram of a layer-deposition system 2560 much the same as that of Figure 24B, however rather than using a sheet of polymer or other homogenous substrate material 2410, system 2560 starts with a sheet 2561 having a plurality of processed ~~circuits~~ packaged ICs 2540 that are received by takeup reel 2563.

The paragraph beginning at page 64, line 4, is amended as follows:

Figure 26A shows a perspective view of an device 2600 of the present invention having an integrated circuit 2510 overlaid on its back with a battery 2320. This embodiment is similar to that of Figure 25A, except that the battery 2320 is deposited on the back of IC 2510, and is wire-lead bonded to contact 2514 using wire 2614 from battery contact 2519 and to contact 2515 using wire 2615 from battery contact 2518.

The paragraph beginning at page 64, line 26, is amended as follows:

In some embodiments, embodiment 2600 further includes an antenna or electromagnetic radiation receiving loop ~~2660~~ 2662 fabricated on a surface of integrated circuit 2510, for example, on the opposite side as that facing battery 2320. In some such embodiments, device 2600 also includes one or more devices 2650 such as sound transducers for such applications as a hearing aid having an combined transducer-battery-amplifier device in order to provide a radio frequency-wave-rechargeable hearing aid which could be taken out of the ear at night and placed in an RF-emitting recharging stand (e.g., that of Figure 27M), avoiding the need to replace batteries or even to electrically connect to an external recharging circuit.

The paragraph beginning at page 65, line 4, is amended as follows:

In various embodiments, such an antenna or electromagnetic radiation receiving loop ~~2660~~ 2662 is fabricated on device 2202, 2203, ~~2203,~~ 2204, 2206, 2207, 2208, 2300, 2400, or 2500 (or 2700 described below) or other battery devices described herein. In some such embodiments, electromagnetic radiation received wirelessly by antenna ~~2660~~ 2662 can be such low-frequency radiation as 50- or 60-hertz magnetic radiation from a coil connected to house current (e.g., that of Figure 27L). In other such embodiments, RF radiation such as radio, TV, cellular, etc. having frequencies up to and exceeding 2.4 GHz is received. In some embodiments, multiple antennae are used, e.g., one for transducing communications signals and another for receiving recharging signals.

The paragraph beginning at page 67, line 17, is amended as follows:

Figure 27L shows an perspective view of a device 2700 of Figure 27E, but further including a photovoltaic cell 2650, at a light-recharging station that includes lamp 2791. In some embodiments, device 2700 is fabricated in a shape to fit in the ear, includes sound transducers, and functions as a hearing aid that can be recharged an indefinite number of times, eliminating the need to replace its battery.

The paragraph beginning at page 67, line 26, is amended as follows:

Solid-state rechargeable batteries such as those described above have the unique ability of being integrated directly with the electronics they will power. Further integration of thin-wire antenna/coil ~~2660~~ 2662 or 2750 to be used as one of the coils of a two-part transformer such as shown in Figure 27K and/or RF-scavenging technology such as that used in keyless entry systems allows the recharging of the solid-state thin-film battery 2320 wirelessly (through the air). Using techniques already common in RF I.D. tagging, the communicated energy is converted into a D.C. voltage and used to perform functions on board. In the case where a battery already exists on board, the D.C. voltage is used to power up recharge circuitry to wirelessly recharge the on-board battery.

The paragraph beginning at page 69, line 5, is amended as follows:

Figure 31C shows one method for making a pacemaker 3102. The method includes a plurality of steps carrying the reference numbers 3194, 3195, 3196 and 3197. The pacemaker 3102 includes a first half 3131 and a second half 3130. In the initial step, 3194, the second half 3130 is provided. A battery cell 1110 is formed on an interior surface of the pacemaker 3102, as shown by step 3195. The single cell 1110 is deposited on the interior surface, as shown by step 3195. The electronics 3150 are then placed onto the battery 1110 to form a circuit with the battery 1110, as depicted by step 3196. The first half 3131 of the enclosure is placed over the second half 3130 to form the assembled pacemaker 3102, as depicted by step 3197.

The paragraph beginning at page 70, line 24, is amended as follows:

Of the 2 billion rechargeable batteries consumed in the United States in 1998, only about 300 million were actually recycled. That means about 1.7 billion recyclable batteries made it into landfills. Although more and more of these batteries are technically environmentally safe, this still represents a significant load on the landfill situation in the USA. The present invention provides a solution that will have its greatest impact as solid-state lithium-ion batteries begin to dominate the rechargeable battery market. In this invention, solid-state lithium-ion batteries have a date code and/or recycle value associated with them. Because of the very large (over 40,000) number of charge/discharge cycles possible with solid-state lithium batteries, the average expected life of a cell could exceed 100 years. It is therefore very likely that the product in which the cell is placed will lose its usefulness well before the battery cell is depleted. Thus, when the battery reaches the end of its useful life based on the obsolescence of the product it was in, the consumer will be enticed to recycle the battery based on the value returned to the consumer in exchange for recycling. This value could be a function of the date code and application the battery was used in. The recycler 2810 then disassembles the unit 2800, tests the single cells 2801, and then rebuilds the cells in whatever configuration is most in demand at that time. The rebuilt unit ~~2800'~~ could then be sold at an appropriate cost and warranty on performance.

The paragraph beginning at page 72, line 22, is amended as follows:

Figure 29A shows a block diagram of a layer-deposition system 2960. System 2960 has layer deposition sections 2962 much the same as those of ~~Figure~~ system 2460 of Figure 24B, except that it is set up to deposit layers onto wafers 2961 (or onto diced ICs 2510 rather than onto flexible substrates), resulting in processed wafers 2963. Figure 29B shows a perspective view of a partially processed wafer 2964 having battery material 2320 on wafer 2961 or IC 2410.

The paragraph beginning at page 72, line 27, is amended as follows:

Figure 29C shows a block diagram of a layer-deposition system 2965. System 2965 has layer deposition sections 2962 much the same as those of ~~Figure~~ system 2465 of Figure 24D, except that it is set up to deposit layers onto wafers ~~2961~~ 2966 (or onto diced ICs 2510 rather than onto flexible substrates) by layer-deposition sections 2967, resulting in processed wafers 2968. Figure 29D shows a perspective view of a processed sheet 2969 having battery

material 2320 on wafer 2961 or IC 2410 and covered by a device 2430 such as a photovoltaic cell.

The paragraph beginning at page 73, line 3, is amended as follows:

Figure 29E shows a block diagram of a layer-deposition system 2965. In some such embodiments, system 2965 deposits layers forming a photovoltaic cell device 2650 onto a wafer 2971 or IC 2510. Figure 29F shows a perspective view of a partially processed wafer 2974. Figure 29G shows a block diagram of a layer-deposition system 2960. In some such embodiments, system 2960 deposits layers of a battery 2320. Figure 29H shows a perspective view of a processed wafer 2979. In some embodiments, wafer 2979 represents a single device, and in other embodiments, wafer 2979 is diced or cut into a plurality of individual devices and then wired as necessary to connect the signals on the top of the device to the bottom of the device. Figure 29I shows a perspective view of wired diced final device 2600 having wires 2914 and 2915.

The paragraph beginning at page 74, line 5, is amended as follows:

Figure 31B shows the method for making the pacemaker ~~3100~~ <u>3101</u>. The method is comprised of a plurality of steps carrying the reference numbers 3190, 3191, 3192 and 3193. The pacemaker 3100 includes a first half <u>3131</u> and a second half 3130. A plurality of battery cells 1110 are formed on a substrate material 3140, as shown by step 3190. The substrate material 3140 is diced or cut resulting in a single cell 1110 on the sheet as diced. The single cell 1110 is adhesively bonded to the second half 3130 of the pacemaker 3100, as shown in step 3191. The electronics 3150 are then placed onto the battery 1110 to form a circuit with the battery 1110, as depicted by step 3192. The first half 3131 of the enclosure is placed over the second half 3130 to form the assembled pacemaker 3100.